What is claimed as the invention is:

1. A circular permanent magnet array comprising:

a plurality of elongate magnets each having a longitudinal axis, the magnets arranged around a common central axis of rotation with the longitudinal axes located parallel to and radially offset from the axis of rotation; and

a nonmagnetic magnet holder for maintaining the magnets in a fixed position, the magnet holder being made of a material selected from the group consisting of conventional plastic, reinforced thermoplastic and compression molded fiber and epoxy.

2. The magnet array of claim 1, wherein the plurality of magnets includes a first set having a predetermined number of magnets equally spaced around the axis of rotation, and a second set having the same predetermined number of magnets, each of the magnets of the second set being axially aligned with a corresponding magnet in the first set.

3. The magnet array of claim 1, wherein all of the magnets are rare earth magnets.

4. The magnet array of claim 1, wherein the magnet holder includes a retainer generally surrounding each of the magnets, and a separate sleeve-shaped liner located radially outward from and surrounding the retainer.

5. The magnet array of claim 1, wherein the magnets each have two ends and an alignment feature provided on at least one the ends to locate the magnet in a predetermined orientation with respect to the holder.

6. The magnet array of claim 5 wherein the alignment feature comprises a stepped portion.

7. The magnet array of claim 5 wherein the alignment feature comprises a groove.

8. The magnet array of claim 1 wherein each of the magnets is symmetrical about its longitudinal axis.

9. The magnet array of claim 1 wherein each of the magnets has a circular cross-section.

10. The magnet array of claim 1 wherein each of the magnets has a square cross-section.

11. An electric machine comprising:

a rotor having a first bore along a central axis of rotation thereof, the first bore defining an inner surface of the rotor;

a plurality of elongate magnets located within the first bore adjacent to the inner surface and arranged around the axis of rotation;

a magnet holder for securing the magnets to the rotor, the magnet holder being a separate piece from the rotor and having a second bore; and

a stator fixedly located within the second bore.

12. The electric machine of claim 11, wherein the rotor is a composite structure.

13. The electric machine of claim 11, wherein the plurality of magnets are located directly against the inner surface of the rotor.

14. The electric machine of claim 12, wherein the inner surface of the rotor includes a substantially flat facet for each of the plurality of magnets.

15. The electric machine of claim 12, wherein the inner surface of the rotor has a predetermined radius and wherein the plurality of magnets each have a generally square cross-section with one side having a convex radius matching the predetermined radius.

16. The electric machine of claim 11, wherein the plurality of magnets includes a first set having a predetermined number of magnets equally spaced around the axis of rotation, and a second set having the same predetermined number of magnets, each of the magnets of the second set being axially aligned with a corresponding magnet in the first set.

17. The electric machine of claim 11, wherein all of the magnets are rare earth magnets.

18. The electric machine of claim 11, wherein the magnet holder includes a retainer generally surrounding each of the magnets, and a separate liner located between the magnets and the inner surface of the rotor.

19. The electric machine of claim 11, wherein the magnets each have two ends and an alignment feature provided on at least one the ends to locate the magnet in a predetermined orientation with respect to the holder.

20. The electric machine of claim 19 wherein the alignment feature comprises a stepped portion.

21. The electric machine of claim 19 wherein the alignment feature comprises a groove.

22. The electric machine of claim 11 wherein each of the magnets is symmetrical about its longitudinal axis.

23. The electric machine of claim 11 wherein each of the magnets has a circular cross-section.

24. The electric machine of claim 11 wherein each of the magnets has a square cross-section.

25. A method of assembling a rotor comprising the steps of:

inserting a generally sleeve-shaped magnet retainer into a central bore of a rotor, the retainer having a circular array of empty elongated cavities open at one end;

inserting an elongated magnet into each of the cavities; and

leaving the retainer and magnets in place within the bore as a permanent attachment to the rotor.

26. The method of claim 25 further comprising the step of inserting a generally sleeve-shaped liner into the central bore of the rotor before inserting the magnet retainer.